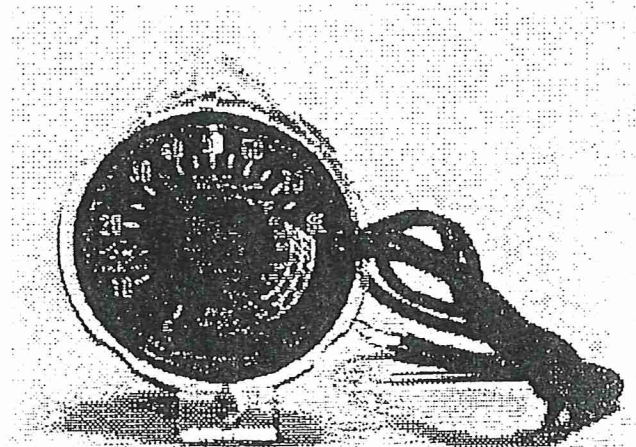
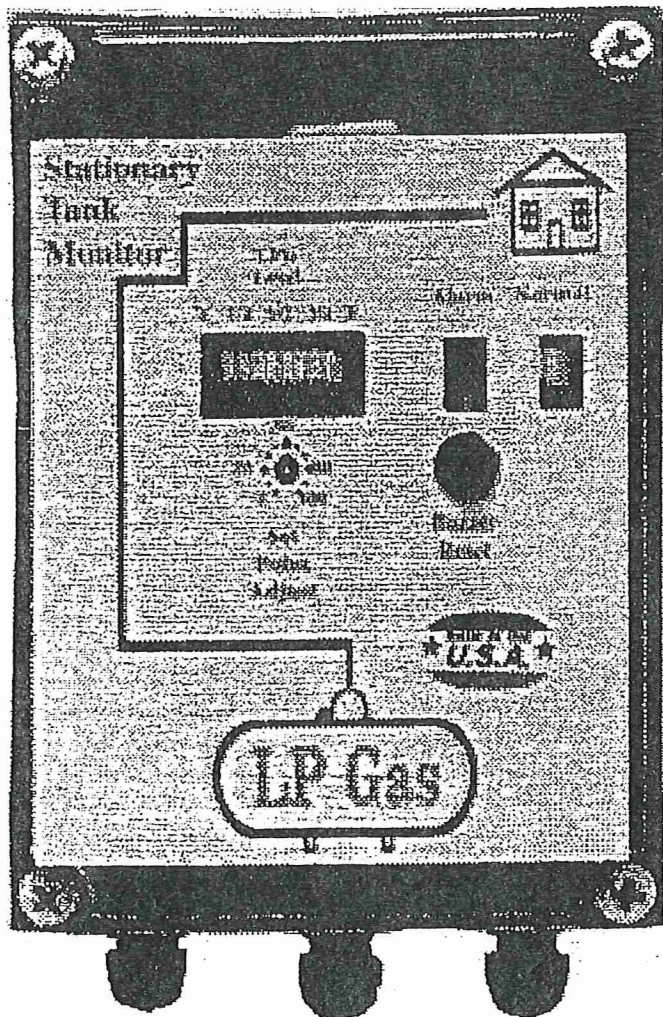


LPG Stationary Tank  
Monitor PN # 136619

## LPG Stationery Tank Monitor for Domestic and Industrial installations

Rev. 1.0 Date: 08-12-96



This manual belongs to: \_\_\_\_\_

Company: \_\_\_\_\_

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**LPG Stationary Tank Monitor PN#136619**  
**For Domestic and Industrial tanks**

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Thank You

Squibb Taylor, Inc. thanks you for purchasing this product and hopes that it can fulfill all your LPG level monitoring needs now and in the future.



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### *Revision History*

Version	Page	Date	Reason
1.0		08/12/97	Initial release
2.0		10/20/97	Squibb-Taylor file: Staylor94442.wpd



#### **Please Note:**

Squibb Taylor, Inc. encourages and appreciates customer feedback regarding this document errors or improvements.

If you have any questions regarding this manual or this product, please call or write to the following:

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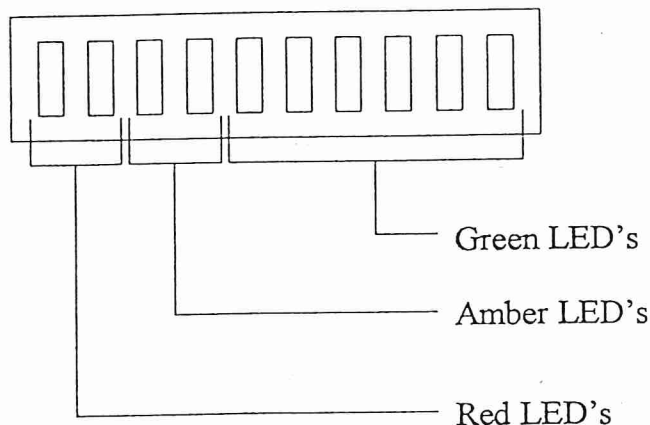
### Product Overview

This stationary tank monitor is used for measuring LPG level in a tank. It can be installed indoors or outdoors at a convenient location that can be up to a 1000 feet from the tank. A level sender is also included which must be installed in the float gage located on the tank. The LPG tank does not have to be emptied or purged to install the sender. Its universal design fits most junior and senior LPG float gages and includes a direct read pointer that can be used to indicate LPG level at the tank. Using a good outside grade two conductor shielded cable (18-20 awg), the sender is connected to the monitor.

The monitor contains the following:

- 1) A Multi-colored bar graph to indicate current LPG level. There are 2 red, 2 amber and 6 green LED's in this bar graph. Red indicates EMPTY and green indicates full on a scale of 0 to 100 % of LPG level.

### Bar Graph



- 2) A Red LED which indicates that the LPG level is below the Low Level Trip Set Point.
- 3) A Green LED which indicates that the LPG level is above the Low Level Trip Set Point.
- 4) An audible buzzer that is activated when the LPG level is below the Low Level Trip Set Point. This buzzer can be set to operate in two modes, i.e. latching and non-latching. In the latching mode the buzzer activates when the LPG level is below the Low Level Trip Set Point but can be deactivated by the user by pushing the Reset push-button on the front cover of the unit. The buzzer will not activate again in this mode until the LPG level has risen above the Low Level Trip Set Point and dropped below it again. In the non-latching mode, the buzzer is activated when the



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LPG level is below the Low Level Trip Set Point and cannot be reset by the push-button. It remains activated as long as the low level condition is present. The user can select the latching/non-latching operating mode by placing the shorting jumper on J3 (refer to fig. 1) in the appropriate position. Additionally, the buzzer can be completely turned off by placing the shorting jumper on J1 in the appropriate position (refer to fig. 1).

- 5) A low level alarm control relay which operates the same as the audible buzzer. It can be set in the latching or the non-latching mode using the same jumper J3. Two DPDT dry contacts are available for the user to connect any external device to indicate or sense a low LPG level condition. They are each rated at 120 VAC at 5 Amps maximum current. Typical devices connected to this relay would be external high voltage alarm light, security system, remote monitoring unit (RTU), etc.
- 6) A 0-5 Volt analog output that indicates the LPG level. This output is used typically used to connect to a remote monitoring device, programmable controller, etc. Figure 2 shows a graph of the analog output verses the LPG level. This output can be connected to a signal conditioner to provide a 4-20 mA signal indicative of the LPG level.



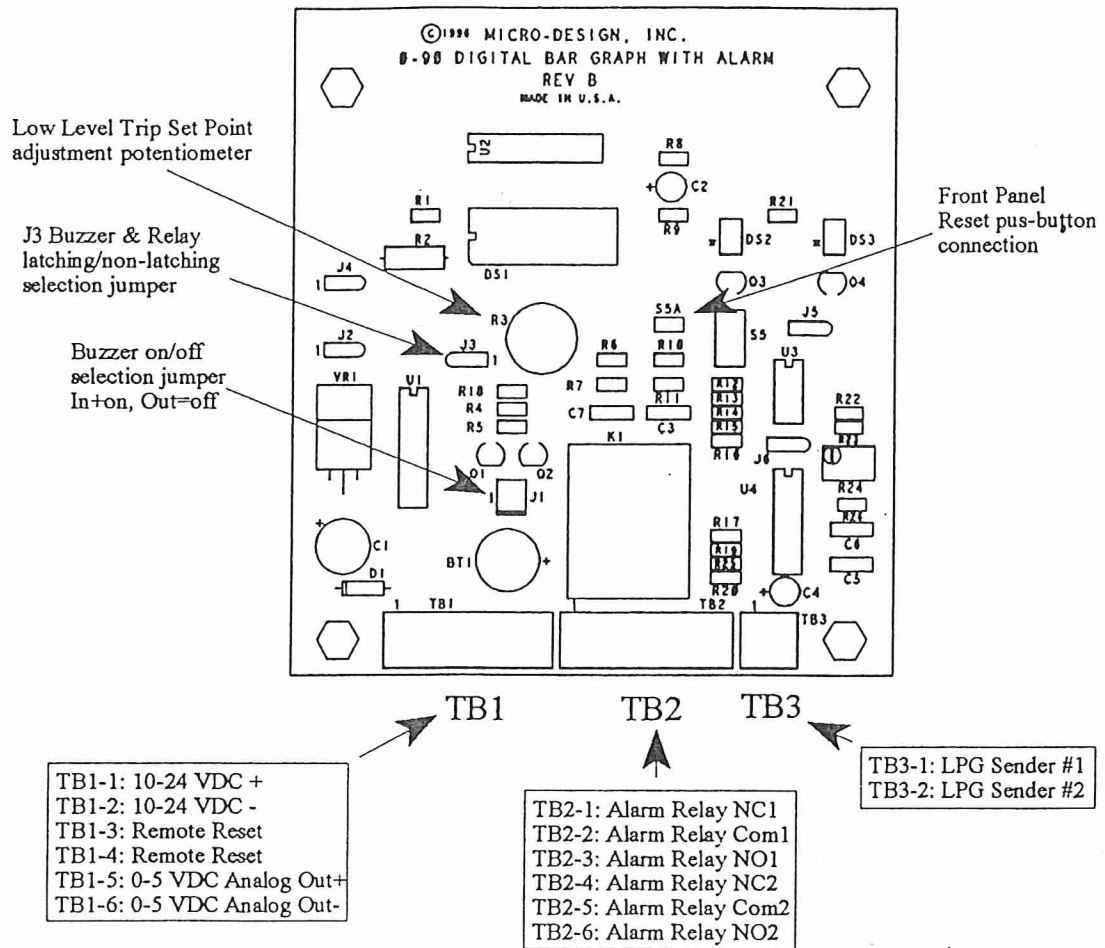
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**Figure 1 Control board layout**





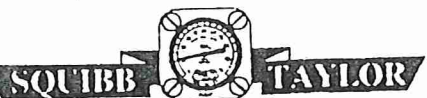
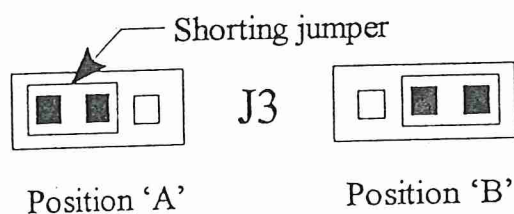
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### Hardware Installation

- 1) DO NOT INSTALL THE SENDER AT THE TANK, YET.
- 2) Locate the place where the monitor is to be installed. Drill four holes according to the dimensions shown in figure 3. Remove the lid of the monitor (undo 4 corner screws). Mount the monitor using the appropriate screws to fit through the feed-through holes on the four corners.
- 3) Temporarily connect the two sender wires directly to the monitor TB3-1 and TB3-2. It does not matter which sender wire is connected to which TB3 terminal (refer to fig. 1).
- 4) Connect Relay contacts, Analog output and Remote reset as desired. Refer to figure 1 for connection details.
- 5) Connect power to the monitor either using the supplied 120 VAC transformer or a 10-24 VDC power source supplied by the user. Refer to figure 1 for connection details.
- 6) APPLY POWER TO THE MONITOR.
- 7) The sender level can be changed manually by holding a small magnet at the bottom of the sender and rotating is clockwise or counter-clockwise such that the orange pointer in the sender follows the magnet. Observe the LED's on the bar graph. It should follow the LPG level indicated by the orange pointer.
- 8) The alarm relay and the buzzer can be set to operate in the latching or the non-latching mode by placing jumper J3 in the proper position. Placing it in position 'A' as shown in the fig. below sets the buzzer and alarm relay to operate in the latching mode. Placing it in the 'B' position sets the non-latching mode of operation. Refer to fig. 1.



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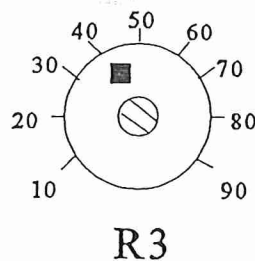
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9) The buzzer can be completely disabled by removing the shorting jumper J2.

10) Low Level Trip Set Point adjust.

The monitor can be set to trip at any desired level. First, locate the set point adjustment potentiometer R3 on the control board (refer to fig. 1). Refer to figure below and set it to 50%. Temporarily select the non-latching mode for the buzzer and the alarm relay. Using a small magnet, change the LPG level and observe the buzzer and the alarm relay activate or de-activate as the level is passed by 50%. Now the set the LPG level at the desired trip set point and adjust the potentiometer R3 until the buzzer and the alarm relay active and de-activate. Leave R3 right at this trip set point.



- 11) Set alarm mode of operation to latching or non-latching. NOTE: In the latching mode the alarm stays on once it has been tripped regardless of the LPG level. The reset push-button must be pushed to de-activate/reset the alarm.
- 12) Remove power to the unit and put the enclosure lid back on. Make sure that the Reset push-button on the lid is connected to the control board (S5A). Refer to fig. 1. Disconnect the sender and install it on the LPG tank (refer to sender installation instructions provided in the sender packet).
- 13) Install and connect the cable between the sender and the monitor. Any 2 conductor, shielded, 16 to 22 awg., multi strand cable can be used for this purpose. NOTE: if this cable is not installed in a conduit, then be sure to select a good outside grade cable that can be used for direct burial if necessary.
- 14) Apply power to the unit and make sure that the monitor is displaying the correct LPG level observed at the tank.



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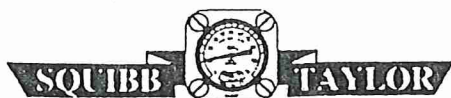
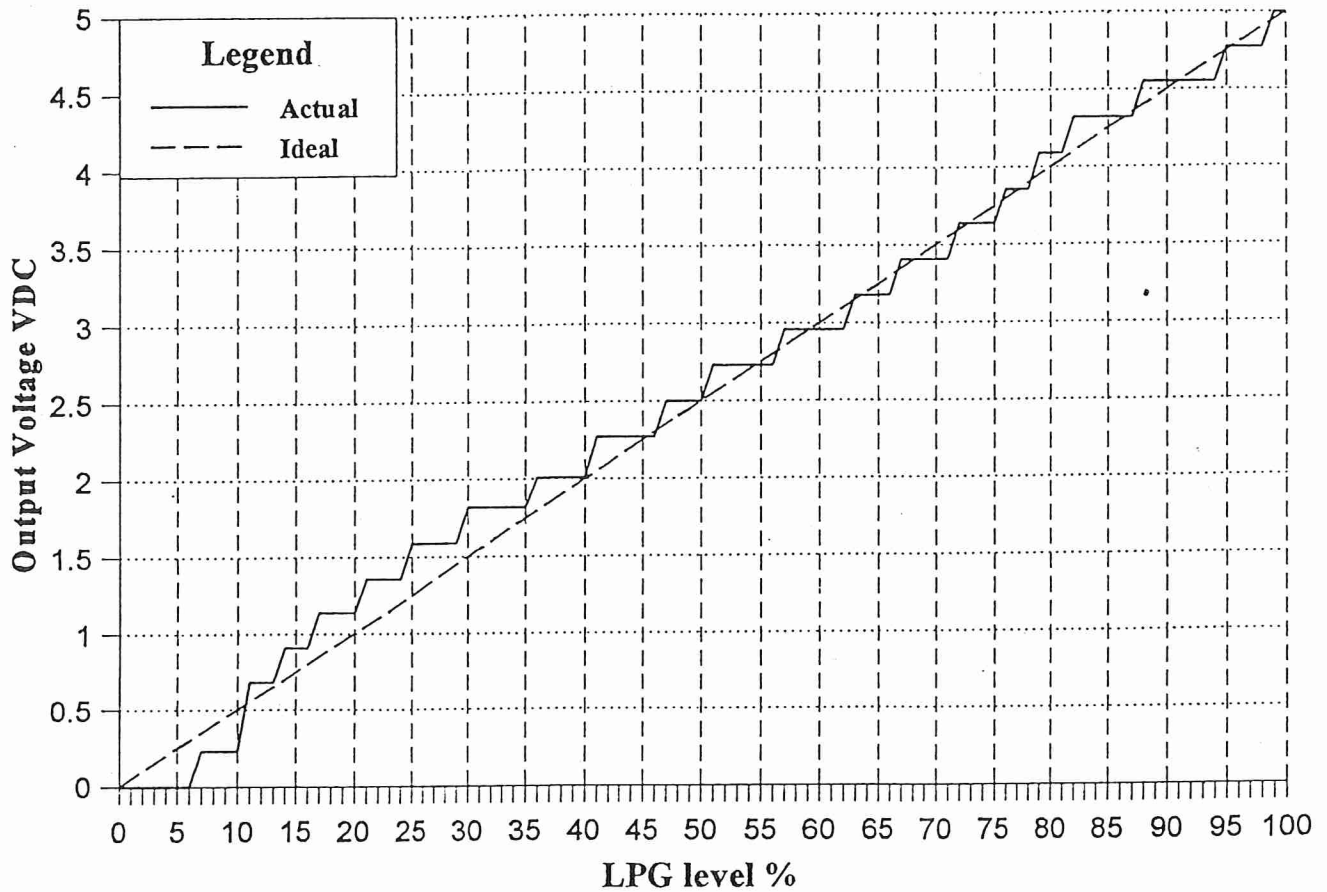
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Figure 2: Analog Output

### Analog Output vs. LPG level



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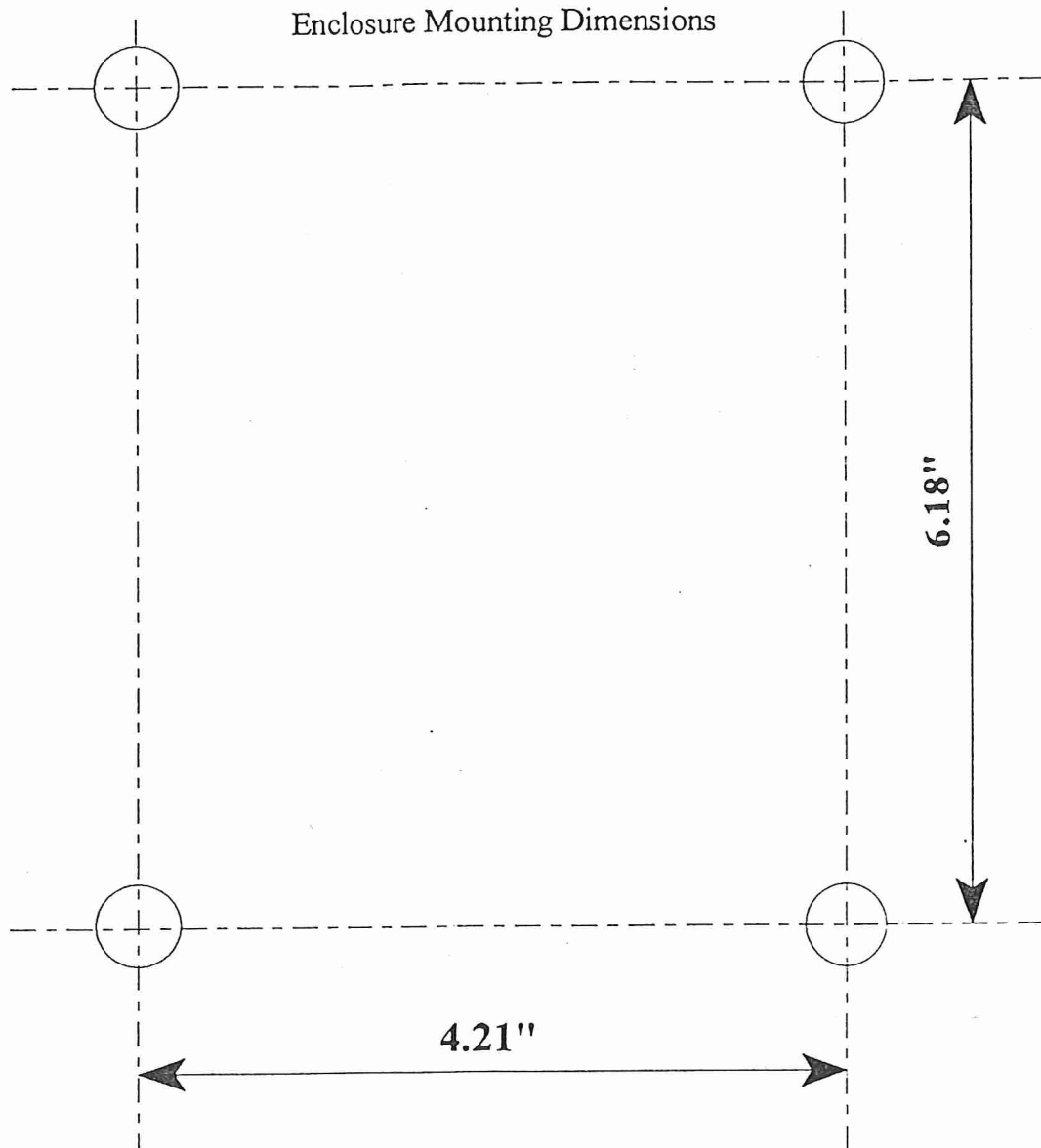
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Figure 3: Monitor mounting dimensions

Figure 3



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### Monitor Specifications

#### Power

A.C. Transformer:	Input	120 VAC
	Output	12 Volts DC
	Output Current	0.2 Amps

Monitor Input Power:	10-24 Volts DC
Monitor Current Consumption:	0.25 Amps max.

#### Sender Output:

Maximum output voltage to sender:	5 Volts DC
Maximum output current to sender:	10 mA

#### Alarm Relay specifications:

2 Form 'C' contacts rated at	5 Amps each
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#### Analog output:

Volts	0-5 Volts DC
Output current:	20 mA max.

#### Enclosure:

NEMA 4x, sealed, weather-proof, designed for indoor or outdoor use.

Monitor operating temperature:	10 to 150 °F
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Monitor electrical rating:	Class 1, Div. 2, groups C & D
----------------------------	-------------------------------

Note: Typical use of this monitor would be in conjunction with senders installed in 'Domestic tanks' of less than 1000 lbs. water capacity. It can be used on tanks at residential, commercial and industrial locations where LPG is dispensed from the tank at 15 feet away in all directions from the tank.



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### Sender Specifications

Mdi part no. 94417

Resistance range:	0 - 1000 Ohms
Operating Voltage range	0 - 24 Volts DC max.
Power rating	.125 Watts

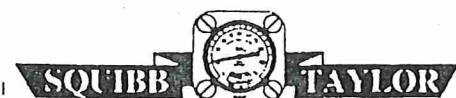
Operating temperature:	-40 to 70 °C
	-40 to 158 °F

Enclosure:	Sealed - Lexan top and bottom
	Ultrasonically welded

### Electrical specification:

When used with STM PN#'s: 94440, 94441, 136619, 944450 and 944452: **Class 1, Div. 2, Groups C & D**

When used with STM PN#s: 944443 and 94501 installed with Intrinsically Safe Barriers #  
STAHL 9001/02-093/150/00 or equivalent: **Class 1, Div. 1, Groups C & D.**



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Most frequently asked questions and answers (Q & A):

- 1) Unit is installed but will not show anything on the display.
  - a) Check power. Make sure that Power +(10-24 VDC) is connected to TB1-2 and Power - to TB1-2.
  - b) Make sure that the sender is properly connected to TB3-1 and TB3-2.
  - c) Check and verify that the control board inside the controller is not damaged or scratched.
- 2) Unit will not trip on a low level condition.
  - a) Check and make sure that the Low Level Alarm Set Point is set i.e. position of potentiometer R3.
  - b) Make sure that jumper J3 on the control board is "IN" to activate the buzzer.
  - c) Make sure that the alarm latching/non-latching mode has been properly set with jumper J6 on control board.
- 3) The multicolored bar graph will not illuminate to display LPG level.
  - a) Make sure that the bar is securely plugged into its socket. A hard impact on the monitor could make it loose.
- 4) The 0-5 Volt DC analog output will not give out proper readings.
  - a) This output can be re-calibrated by setting the LPG sender to 50% and adjusting potentiometer R24 such that the output reads 2.5 Volts. This can be done by a qualified electrician. Call factory for farther instructions if needed.



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